

REMARKS**Summary of the Office Action**

Claims 8-10 and 12-17 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Korenowski (US 4,140,772) in view of Applicants' Admitted Prior Art and Hong et al. (US 6,130,443).

Claims 8-10 and 12-17 stand rejected under 35 U.S.C. § 112, first paragraph.

Claims 8-10 and 12-17 stand rejected under 35 U.S.C. § 112, second paragraph.

The Abstract of the Disclosure is objected to due to the Election made on September 10, 2003.

Summary of the Response to the Office Action

Applicants have amended the Abstract of the Disclosure and claim 8, withdrawn claims 1-4 and 7, and canceled claims 15 and 16. Accordingly, claims 8-10, 12-14, and 17 are pending.

Objection to the Abstract of the Disclosure

The Abstract of the Disclosure is objected to due to the Election made on September 10, 2003. Accordingly, Applicants respectfully submit herewith a new Abstract in accordance with the Examiner's comments. Thus, Applicants respectfully request that the objection to the Abstract be withdrawn.

All Claim Comply With 35 U.S.C. § 112

Claims 8-10 and 12-17 stand rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement. Specifically, the Office Action alleges that recitation of "a third copper metal layer" is new matter. Applicants respectfully traverse the rejection for at least the following reasons.

Independent claim 8 recites a step of “forming a third copper metal layer on the second metal layer,” and dependent claim 12 recites “the third copper metal layer includes copper alloy.” Applicants respectfully submit that these features of claims 8 and 12 are fully supported at paragraph [0046], and are shown in at least FIG. 6B. Specifically, as disclosed at paragraph [0046], “the third metal layer may include copper (Cu) or copper alloy, for example.”

Accordingly, Applicants respectfully assert that claims 8 and 12 are fully supported by the disclosure and comply with the written description requirements under 35 U.S.C. § 112, first paragraph. Thus, Applicants respectfully request that the rejection under 35 U.S.C. § 112, first paragraph, be withdrawn.

Claims 8-10 and 12-17 stand rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicants regard as the invention. Specifically, the Office Action alleges that use of the phrase “a third copper” in claims 8 and 12 is vague and indefinite since “a first copper” and “a second copper” are not recited by claims 8 and 12. Applicants respectfully traverse the rejection for at least the following reasons.

Independent claim 8 recites a step of “forming a third copper metal layer on the second metal layer.” Applicants respectfully submit that the recitation of “a third copper” is taken out of context with regard to the entire recitation of “a third copper metal layer.” Moreover, Applicants respectfully submit that the “third copper metal layer” is merely a recitation of a third metal layer having copper. For example, independent claim 8 recites steps of forming a first metal layer and a second metal layer including a step of forming a third metal layer, which is made of copper. Accordingly, Applicants respectfully assert that the recitation of “a third copper metal layer”

merely denotes a third metal layer that includes copper, and is used to modify the claimed feature of a third metal layer. Thus, Applicants respectfully assert that the recitation of “a third copper” is definite and complies with the requirements of 35 U.S.C. § 112, second paragraph, and respectfully requests that the rejection under 35 U.S.C. § 112, second paragraph, be withdrawn.

All Claims Define Allowable Subject Matter

Claims 8-10 and 12-17 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Korenowski (US 4,140,772) in view of Applicants’ Admitted Prior Art and Hong et al. (US 6,130,443). Applicants respectfully traverse the rejection as being based upon a combination of Applicants’ Related Art and prior art references that neither teach nor suggest the novel combination of features recited in amended independent claim 8, and hence dependent claims 9, 10, 12-14, and 17.

Independent claim 8 recites a method of forming an array substrate including a step of “simultaneously patterning the second metal layer and the third copper metal layer to form a double-layered data line, a double-layered source electrode and a double-layered drain electrode using an etchant that includes hydrogen peroxide (H₂O₂), a H₂O₂ stabilizer, and a neutral salt.” The Office Action admits that “Korenowski teaches an etchant comprising hydrogen peroxide and a mixed solution including an acid such as sulfuric acid or nitric acid.” The Office Action adds that “Korenowski teaches that the above etchant may be used to etch metals such as copper, alloy of copper, molybdenum and the like.”

However, Applicants respectfully assert that Korenowski fails to teach or suggest “an etchant that includes hydrogen peroxide (H₂O₂), a H₂O₂ stabilizer, and a neutral salt,” as recited by amended independent claim 8, and hence dependent claims 9, 10, 12-14, and 17.

With regard to Hong et al. and Applicants' Related Art, Applicants respectfully note that the Office Action does not rely upon Hong et al. and/or Applicants' Related Art to remedy the above-noted deficiencies of Korenowski. Moreover, Applicants respectfully submit that Hong et al. and/or Applicants' Related Art cannot remedy the above-noted deficiencies of Korenowski.

MPEP §2143.01 instructs that “[t]he mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination. *In re Mills*, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990).” Moreover, MPEP §2143.03 instructs that “[t]o establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. *In re Royka*, 409 F.2d 981, 180 USPQ 580 (CCPA 1974).” Accordingly, because Korenowski, Applicants' Related Art, and Hong et al. do not teach or suggest **all the claim limitations**, and the applied art does not provide recognition between the claimed invention and the Office Action's alleged “conventionality” motivation, Applicants respectfully assert that the Office Action has not established a *prima facie* case of obviousness.

For at least the above reasons, Applicants respectfully assert that the rejection under 35 U.S.C. § 103(a) should be withdrawn because Korenowski, Applicants' Related Art, and/or Hong et al., whether taken individually or in combination, neither teach nor suggest the novel combination of features clearly recited in independent claim 8, and hence dependent claims 9, 10, 12-14, and 17.

Conclusion

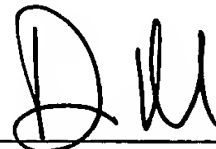
In view of the foregoing, Applicants respectfully request entry of the amendment, reconsideration, and timely allowance of the pending claims. Should the Examiner believe that there are any issues outstanding after consideration of this response, the Examiner is invited to contact Applicants' undersigned representative to expedite prosecution.

If there are any other fees due in connection with the filing of this response, please charge the fees to our Deposit Account No. 50-0310. If a fee is required for an extension of time under 37 C.F.R. § 1.136 not accounted for above, such an extension is requested and the fee should also be charged to our Deposit Account.

Respectfully submitted,

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